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1 [Join processing in relational databases](#)



Priti Mishra, Margaret H. Eich

March 1992 **ACM Computing Surveys (CSUR)**, Volume 24 Issue 1

Publisher: ACM Press

Full text available: pdf(4.42 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

The join operation is one of the fundamental relational database query operations. It facilitates the retrieval of information from two different relations based on a Cartesian product of the two relations. The join is one of the most difficult operations to implement efficiently, as no predefined links between relations are required to exist (as they are with network and hierarchical systems). The join is the only relational algebra operation that allows the combining of related tuples from ...

Keywords: database machines, distributed processing, join, parallel processing, relational algebra

2 [Inverted files for text search engines](#)



Justin Zobel, Alistair Moffat

July 2006 **ACM Computing Surveys (CSUR)**, Volume 38 Issue 2

Publisher: ACM Press

Full text available: pdf(944.29 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

The technology underlying text search engines has advanced dramatically in the past decade. The development of a family of new index representations has led to a wide range of innovations in index storage, index construction, and query evaluation. While some of these developments have been consolidated in textbooks, many specific techniques are not widely known or the textbook descriptions are out of date. In this tutorial, we introduce the key techniques in the area, describing both a core impl ...

Keywords: Inverted file indexing, Web search engine, document database, information retrieval, text retrieval

3 [Run-time adaptation in river](#)



Remzi H. Arpaci-Dusseau

February 2003 **ACM Transactions on Computer Systems (TOCS)**, Volume 21 Issue 1



Publisher: ACM Press

Full text available: [pdf\(849.04 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

We present the design, implementation, and evaluation of run-time adaptation within the River dataflow programming environment. The goal of the River system is to provide adaptive mechanisms that allow database query-processing applications to cope with performance variations that are common in cluster platforms. We describe the system and its basic mechanisms, and carefully evaluate those mechanisms and their effectiveness. In our analysis, we answer four previously unanswered and important que ...

Keywords: Performance availability, clusters, parallel I/O, performance faults, robust performance, run-time adaptation

4 Implications of hierarchical N-body methods for multiprocessor architectures



Jaswinder Pal Singh, John L. Hennessy, Anoop Gupta

May 1995 **ACM Transactions on Computer Systems (TOCS)**, Volume 13 Issue 2

Publisher: ACM Press

Full text available: [pdf\(4.66 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

To design effective large-scale multiprocessors, designers need to understand the characteristics of the applications that will use the machines. Application characteristics of particular interest include the amount of communication relative to computation, the structure of the communication, and the local cache and memory requirements, as well as how these characteristics scale with larger problems and machines. One important class of applications is based on hierarchical N-body methods, w ...

Keywords: N-body methods, communication abstractions, locality, message passing, parallel applications, parallel computer architecture, scaling, shared address space, shared memory

5 Adaptive algorithms for set containment joins



Sergey Melnik, Hector Garcia-Molina

March 2003 **ACM Transactions on Database Systems (TODS)**, Volume 28 Issue 1

Publisher: ACM Press

Full text available: [pdf\(485.76 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

A set containment join is a join between set-valued attributes of two relations, whose join condition is specified using the subset (\subseteq) operator. Set containment joins are deployed in many database applications, even those that do not support set-valued attributes. In this article, we propose two novel partitioning algorithms, called the Adaptive Pick-and-Sweep Join (APSJ) and the Adaptive Divide-and-Conquer Join (ADCJ), which allow computing set containment joins efficiently. We show that ...

6 Cellular disco: resource management using virtual clusters on shared-memory multiprocessors



Kinshuk Govil, Dan Teodosiu, Yongqiang Huang, Mendel Rosenblum

August 2000 **ACM Transactions on Computer Systems (TOCS)**, Volume 18 Issue 3

Publisher: ACM Press

Full text available: [pdf\(287.05 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

Despite the fact that large-scale shared-memory multiprocessors have been commercially

available for several years, system software that fully utilizes all their features is still not available, mostly due to the complexity and cost of making the required changes to the operating system. A recently proposed approach, called Disco, substantially reduces this development cost by using a virtual machine monitor that leverages the existing operating system technology. In this paper we present a ...

Keywords: fault containment, resource management, scalable multiprocessors, virtual machines

7 Query evaluation techniques for large databases



Goetz Graefe

June 1993 **ACM Computing Surveys (CSUR)**, Volume 25 Issue 2

Publisher: ACM Press

Full text available: [pdf\(9.37 MB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

Database management systems will continue to manage large data volumes. Thus, efficient algorithms for accessing and manipulating large sets and sequences will be required to provide acceptable performance. The advent of object-oriented and extensible database systems will not solve this problem. On the contrary, modern data models exacerbate the problem: In order to manipulate large sets of complex objects as efficiently as today's database systems manipulate simple records, query-processi ...

Keywords: complex query evaluation plans, dynamic query evaluation plans, extensible database systems, iterators, object-oriented database systems, operator model of parallelization, parallel algorithms, relational database systems, set-matching algorithms, sort-hash duality

8 Technical correspondence



CORPORATE Tech Correspondence

August 1989 **Communications of the ACM**, Volume 32 Issue 8

Publisher: ACM Press

Full text available: [pdf\(1.32 MB\)](#)

Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

9 The elements of nature: interactive and realistic techniques



Oliver Deussen, David S. Ebert, Ron Fedkiw, F. Kenton Musgrave, Przemyslaw Prusinkiewicz, Doug Roble, Jos Stam, Jerry Tessendorf

August 2004 **ACM SIGGRAPH 2004 Course Notes SIGGRAPH '04**

Publisher: ACM Press

Full text available: [pdf\(17.65 MB\)](#)

Additional Information: [full citation](#), [abstract](#)

This updated course on simulating natural phenomena will cover the latest research and production techniques for simulating most of the elements of nature. The presenters will provide movie production, interactive simulation, and research perspectives on the difficult task of photorealistic modeling, rendering, and animation of natural phenomena. The course offers a nice balance of the latest interactive graphics hardware-based simulation techniques and the latest physics-based simulation techni ...

10 Point-based computer graphics



Marc Alexa, Markus Gross, Mark Pauly, Hanspeter Pfister, Marc Stamminger, Matthias Zwicker

August 2004 **ACM SIGGRAPH 2004 Course Notes SIGGRAPH '04**

Publisher: ACM Press

Full text available:  [pdf\(8.94 MB\)](#) Additional Information: [full citation](#), [abstract](#), [citations](#)

This course introduces points as a powerful and versatile graphics primitive. Speakers present their latest concepts for the acquisition, representation, modeling, processing, and rendering of point sampled geometry along with applications and research directions. We describe algorithms and discuss current problems and limitations, covering important aspects of point based graphics.

11 The effects of lexical specialization on the growth curve of the vocabulary

R. Harald Baayen

December 1996 **Computational Linguistics**, Volume 22 Issue 4

Publisher: MIT Press

Full text available:  [pdf\(1.67 MB\)](#)  Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#)
[Publisher Site](#)

The number of different words expected on the basis of the urn model to appear in, for example, the first half of a text, is known to overestimate the observed number of different words. This paper examines the source of this overestimation bias. It is shown that this bias does not arise due to sentence-bound syntactic constraints, but that it is a direct consequence of topic cohesion in discourse. The nonrandom, clustered appearance of lexically specialized words, often the key words of the text ...

12 Spatial augmented reality: Modern approaches to augmented reality



Oliver Bimber, Ramesh Raskar

July 2006 **ACM SIGGRAPH 2006 Courses SIGGRAPH '06**

Publisher: ACM Press

Full text available:  [pdf\(2.45 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#)

This tutorial discusses the Spatial Augmented Reality (SAR) concept, its advantages and limitations. It will present examples of state-of-the-art display configurations, appropriate real-time rendering techniques, details about hardware and software implementations, and current areas of application. Specifically, it will describe techniques for optical combination using single/multiple spatially aligned mirror-beam splitters, image sources, transparent screens and optical holograms. Furthermore, ...


13 System-level power optimization: techniques and tools



Luca Benini, Giovanni de Micheli

April 2000 **ACM Transactions on Design Automation of Electronic Systems (TODAES)**,
Volume 5 Issue 2

Publisher: ACM Press

Full text available:  [pdf\(385.22 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

This tutorial surveys design methods for energy-efficient system-level design. We consider electronic systems consisting of a hardware platform and software layers. We consider the three major constituents of hardware that consume energy, namely computation, communication, and storage units, and we review methods of reducing their energy consumption. We also study models for analyzing the energy cost of software, and methods for energy-efficient software design and compilation. This survey ...

14 Spatial augmented reality: a modern approach to augmented reality: Modern approaches to augmented reality



Oliver Bimber, Ramesh Raskar

July 2005 **ACM SIGGRAPH 2005 Courses SIGGRAPH '05**

Publisher: ACM Press

Full text available:  [pdf\(48.93 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

This tutorial discusses the Spatial Augmented Reality (SAR) concept, its advantages and limitations. It will present examples of state-of-the-art display configurations, appropriate real-time rendering techniques, details about hardware and software implementations, and current areas of application. Specifically, it will describe techniques for optical combination using single/multiple spatially aligned mirror-beam splitters, image sources, transparent screens and optical holograms. Furthermore, ...

15 iDistance: An adaptive B⁺-tree based indexing method for nearest neighbor search



H. V. Jagadish, Beng Chin Ooi, Kian-Lee Tan, Cui Yu, Rui Zhang

June 2005 **ACM Transactions on Database Systems (TODS)**, Volume 30 Issue 2

Publisher: ACM Press

Full text available: pdf(1.16 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

In this article, we present an efficient B⁺-tree based indexing method, called iDistance, for K-nearest neighbor (KNN) search in a high-dimensional metric space. iDistance partitions the data based on a space- or data-partitioning strategy, and selects a reference point for each partition. The data points in each partition are transformed into a single dimensional value based on their similarity with respect to the reference point. This allows the points to be indexed using a B

Keywords: Indexing, KNN, nearest neighbor queries

16 An approach to support automatic generation of user interfaces



Prasun Dewan, Marvin Solomon

October 1990 **ACM Transactions on Programming Languages and Systems (TOPLAS)**, Volume 12 Issue 4

Publisher: ACM Press

Full text available: pdf(3.55 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

In traditional interactive programming environments, each application individually manages its interaction with the human user. The result is duplication of effort in implementing user interface code and nonuniform—hence confusing—input conventions. This paper presents an approach to support automatic generation of user interfaces in environments based on algebraic languages. The approach supports the editing model of interaction, which allows a user to view all appli ...

17 Applications: Dynamic maintenance of molecular surfaces under conformational changes



Eran Eyal, Dan Halperin

June 2005 **Proceedings of the twenty-first annual symposium on Computational geometry SCG '05**

Publisher: ACM Press

Full text available: pdf(959.87 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

We present an efficient algorithm for maintaining the boundary and surface area of protein molecules as they undergo conformational changes. We also describe a robust implementation of the algorithm and report on experimental results with our implementation on proteins with hundreds of residues. Our work extends and combines two previous results: (i) controlled perturbation for static molecular surfaces [18], and (ii) data structures for self-collision testing and energy maintenance of proteins ...

Keywords: controlled perturbation, dynamic data structures, molecular simulations, molecular surfaces, robust geometric computing

18 The topological structure of asynchronous computability



Maurice Herlihy, Nir Shavit

November 1999 **Journal of the ACM (JACM)**, Volume 46 Issue 6

Publisher: ACM Press

Full text available: pdf(1.49 MB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

Keywords: algebraic topology, asynchronous distributed computation, decision tasks, distributed computing, homology, simplicial complex, wait-tree algorithms

19 Perception-motivated high dynamic range video encoding



Rafal Mantiuk, Grzegorz Krawczyk, Karol Myszkowski, Hans-Peter Seidel

August 2004 **ACM Transactions on Graphics (TOG)**, **ACM SIGGRAPH 2004 Papers**

SIGGRAPH '04, Volume 23 Issue 3

Publisher: ACM Press

Full text available: pdf(3.23 MB) mov(23:35 MIN) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Due to rapid technological progress in high dynamic range (HDR) video capture and display, the efficient storage and transmission of such data is crucial for the completeness of any HDR imaging pipeline. We propose a new approach for inter-frame encoding of HDR video, which is embedded in the well-established MPEG-4 video compression standard. The key component of our technique is luminance quantization that is optimized for the contrast threshold perception in the human visual system. The quant ...

Keywords: DCT encoding, HDR video, MPEG-4, adaptation, high dynamic range, luminance quantization, tone mapping, video compression, video processing, visual perception

20 Observed structure of addresses in IP traffic

Eddie Kohler, Jinyang Li, Vern Paxson, Scott Shenker

December 2006 **IEEE/ACM Transactions on Networking (TON)**, Volume 14 Issue 6

Publisher: IEEE Press

Full text available: pdf(904.74 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

We investigate the structure of addresses contained in IPv4 traffic--specifically, the structural characteristics of destination IP addresses seen on Internet links, considered as a subset of the address space. These characteristics have implications for algorithms that deal with IP address aggregates, such as routing lookups and aggregate-based congestion control. Several example address structures are well modeled by multifractal Cantor-like sets with two parameters. This model may be useful f ...

Keywords: address space, address structures, multifractals, network measurement

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1 [Inverted files for text search engines](#)




Justin Zobel, Alistair Moffat

July 2006

ACM Computing Surveys (CSUR), Volume 38 Issue 2

Publisher: ACM Press

Full text available:  [pdf\(944.29 KB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [index](#)

The technology underlying text search engines has advanced dramatically in the past decade. Text representations has led to a wide range of innovations in index storage, index construction, and developments have been consolidated in textbooks, many specific techniques are not widely known of date. In this tutorial, we introduce the key techniques in the area, describing both a core imple

Keywords: Inverted file indexing, Web search engine, document database, information retrieval.

2 [Adaptive algorithms for set containment joins](#)




Sergey Melnik, Hector Garcia-Molina

March 2003

ACM Transactions on Database Systems (TODS), Volume 28 Issue 1

Publisher: ACM Press

Full text available:  [pdf\(485.76 KB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [citation](#)

A set containment join is a join between set-valued attributes of two relations, whose join condition is a containment operator. Set containment joins are deployed in many database applications, even those that do not support this operator. In this article, we propose two novel partitioning algorithms, called the Adaptive Pick-and-Sweep Join (APSJ) and the Conquer Join (ADCJ), which allow computing set containment joins efficiently. We show that ...

3 [Join processing in relational databases](#)



Priti Mishra, Margaret H. Eich

March 1992

ACM Computing Surveys (CSUR), Volume 24 Issue 1

Publisher: ACM Press

Full text available:  [pdf\(4.42 MB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [citation](#)

The join operation is one of the fundamental relational database query operations. It facilitates different relations based on a Cartesian product of the two relations. The join is one of the most efficient, as no predefined links between relations are required to exist (as they are with network databases). The only relational algebra operation that allows the combining of related tuples from ...

Keywords: database machines, distributed processing, join, parallel processing, relational algebra

4 Query evaluation techniques for large databases



Goetz Graefe

June 1993

ACM Computing Surveys (CSUR), Volume 25 Issue 2

Publisher: ACM Press

Full text available: [pdf\(9.37 MB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [citing articles](#)

Database management systems will continue to manage large data volumes. Thus, efficient algorithms for managing large sets and sequences will be required to provide acceptable performance. The advent of object-oriented database systems will not solve this problem. On the contrary, modern data models exacerbate the problem by introducing complex objects as efficiently as today's database systems manipulate simple records, query processing is more complex, and hash duality

Keywords: complex query evaluation plans, dynamic query evaluation plans, extensible database systems, operator model of parallelization, parallel algorithms, relational database systems, hash duality

5 Implications of hierarchical N-body methods for multiprocessor architectures



Jaswinder Pal Singh, John L. Hennessy, Anoop Gupta

May 1995

ACM Transactions on Computer Systems (TOCS), Volume 13 Issue 2

Publisher: ACM Press

Full text available: [pdf\(4.66 MB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [citing articles](#)

To design effective large-scale multiprocessors, designers need to understand the characteristics of the target machines. Application characteristics of particular interest include the amount of communication, the communication pattern, and the local cache and memory requirements, as well as how these characteristics affect the design of the machines. One important class of applications is based on hierarchical N-body methods, which are used in many scientific and engineering applications.

Keywords: N-body methods, communication abstractions, locality, message passing, parallel architectures, scaling, shared address space, shared memory

6 An approach to support automatic generation of user interfaces



Prasun Dewan, Marvin Solomon

October 1990

ACM Transactions on Programming Languages and Systems (TOPLAS), Volume 12 Issue 4

Publisher: ACM Press

Full text available: [pdf\(3.55 MB\)](#)

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7 Point-based computer graphics



Marc Alexa, Markus Gross, Mark Pauly, Hanspeter Pfister, Marc Stamminger, Matthias Zwicker

August 2004

ACM SIGGRAPH 2004 Course Notes SIGGRAPH '04

Publisher: ACM Press

Full text available: [pdf\(8.94 MB\)](#)

Additional Information: [full citation](#), [abstract](#), [citations](#)

This course introduces points as a powerful and versatile graphics primitive. Speakers present techniques for the representation, modeling, processing, and rendering of point sampled geometry along with applications. They describe algorithms and discuss current problems and limitations, covering important aspects of point-based graphics.

8 A case for dynamic view management



Yannis Kotidis, Nick Roussopoulos

 December 2001 **ACM Transactions on Database Systems (TODS)**, Volume 26 Issue 4
Publisher: ACM Press
Full text available:  [pdf\(892.57 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#)

Materialized aggregate views represent a set of redundant entities in a data warehouse that are used for Analytical Processing (OLAP). Due to the complex structure of the data warehouse and the diverse queries, there is need for tools that will automate and ease the view selection and management. DynaMat, a system that manages dynamic collections of materialized aggregate views in a data warehouse.



Keywords: Data cube, OLAP, data warehousing, materialized views

9 Dynamic storage allocation systems

 B. Randell, C. J. Kuehner
May 1968 **Communications of the ACM**, Volume 11 Issue 5
Publisher: ACM Press
Full text available:  [pdf\(1.46 MB\)](#) Additional Information: [full citation](#), [references](#), [citations](#)



Keywords: addressing mechanisms, multiprogramming, paging, segmentation, storage allocation hierarchies, storage management, virtual memories

10 Spatial augmented reality: Modern approaches to augmented reality

 Oliver Bimber, Ramesh Raskar
July 2006 **ACM SIGGRAPH 2006 Courses SIGGRAPH '06**
Publisher: ACM Press
Full text available:  [pdf\(2.45 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#)



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11 Spatial augmented reality: a modern approach to augmented reality: Modern approaches to

 Oliver Bimber, Ramesh Raskar
July 2005 **ACM SIGGRAPH 2005 Courses SIGGRAPH '05**
Publisher: ACM Press
Full text available:  [pdf\(48.93 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index](#)


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12 GPGPU: general purpose computation on graphics hardware


 David Luebke, Mark Harris, Jens Krüger, Tim Purcell, Naga Govindaraju, Ian Buck, Cliff Woolley, Aron
August 2004 **ACM SIGGRAPH 2004 Course Notes SIGGRAPH '04**
Publisher: ACM Press
Full text available:  [pdf\(63.03 MB\)](#) Additional Information: [full citation](#), [abstract](#), [citations](#)

The graphics processor (GPU) on today's commodity video cards has evolved into an extremely powerful device. The latest graphics architectures provide tremendous memory bandwidth and computational horsepower and pixel processing units that support vector operations up to full IEEE floating point precision. Graphics hardware, making this computational power accessible. Architecturally, GPUs are highly

13 Cellular disco: resource management using virtual clusters on shared-memory multiprocessors

 Kinshuk Govil, Dan Teodosiu, Yongqiang Huang, Mendel Rosenblum
August 2000 **ACM Transactions on Computer Systems (TOCS)**, Volume 18 Issue 3

Publisher: ACM Press

Full text available:  [pdf\(287.05 KB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#)


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Keywords: fault containment, resource management, scalable multiprocessors, virtual machine

14 Run-time adaptation in river

 Remzi H. Arpaci-Dusseau
February 2003 **ACM Transactions on Computer Systems (TOCS)**, Volume 21 Issue 1

Publisher: ACM Press

Full text available:  [pdf\(849.04 KB\)](#)

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Keywords: Performance availability, clusters, parallel I/O, performance faults, robust performance

15 Multidimensional access methods

 Volker Gaede, Oliver Günther
June 1998 **ACM Computing Surveys (CSUR)**, Volume 30 Issue 2

Publisher: ACM Press


Full text available:  [pdf\(1.05 MB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#)


Search operations in databases require special support at the physical level. This is true for conventional databases, where typical search operations include the point query (find all objects that contain a given point) and the range query (find all objects that overlap a given search region). More than ten years of spatial database research have resulted in a variety of multidimensional access methods to support ...

Keywords: data structures, multidimensional access methods

16 Comparison of access methods for time-evolving data

 Betty Salzberg, Vassilis J. Tsotras
June 1999 **ACM Computing Surveys (CSUR)**, Volume 31 Issue 2

Publisher: ACM Press

Full text available:  [pdf\(529.53 KB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#)


This paper compares different indexing techniques proposed for supporting efficient access to time-evolving data. The comparison is based on a collection of important performance criteria, including the space consumed, update processing time, and query processing time. The comparison is based on worst-case analysis, hence no assumptions on data distribution. When a number of methods have the same asymptotic worst-case behavior, features in the methods are compared ...

Keywords: I/O performance, access methods, structures, temporal databases

17 Real-time shading

 Marc Olano, Kurt Akeley, John C. Hart, Wolfgang Heidrich, Michael McCool, Jason L. Mitchell, Randi August 2004 **ACM SIGGRAPH 2004 Course Notes SIGGRAPH '04**


Publisher: ACM Press

Full text available:  [pdf\(7.39 MB\)](#)


Additional Information: [full citation](#), [abstract](#)

Real-time procedural shading was once seen as a distant dream. When the first version of this time shading was possible, but only with one-of-a-kind hardware or by combining the effects of Today, almost every new computer comes with graphics hardware capable of interactively executing thousands of instructions. This course has been redesigned to address today's real-time shading

18 Level set and PDE methods for computer graphics

 David Breen, Ron Fedkiw, Ken Museth, Stanley Osher, Guillermo Sapiro, Ross Whitaker August 2004 **ACM SIGGRAPH 2004 Course Notes SIGGRAPH '04**

Publisher: ACM Press

Full text available:  [pdf\(17.07 MB\)](#)


Additional Information: [full citation](#), [abstract](#), [citations](#)

Level set methods, an important class of partial differential equation (PDE) methods, define the level set (iso-surface) of a sampled, evolving nD function. The course begins with preparatory material on partial differential equations to solve problems in computer graphics, geometric modeling and the structure and behavior of several different types of differential equations, e.g. the level set equation.

19 Realistic materials in computer graphics: Realistic materials in computer graphics

 Hendrik P. A. Lensch, Michael Goesele, Yung-Yu Chuang, Tim Hawkins, Steve Marschner, Wojciech July 2005 **ACM SIGGRAPH 2005 Courses SIGGRAPH '05**

Publisher: ACM Press


Full text available:  [pdf\(18.24 MB\)](#)

Additional Information: [full citation](#), [references](#)

20 iDistance: An adaptive B⁺-tree based indexing method for nearest neighbor search

 H. V. Jagadish, Beng Chin Ooi, Kian-Lee Tan, Cui Yu, Rui Zhang June 2005 **ACM Transactions on Database Systems (TODS)**, Volume 30 Issue 2

Publisher: ACM Press

Full text available:  [pdf\(1.16 MB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#)

In this article, we present an efficient B⁺-tree based indexing method, called iDistance, for K high-dimensional metric space. iDistance partitions the data based on a space- or data-partitioning point for each partition. The data points in each partition are transformed into a single dimension with respect to the reference point. This allows the points to be indexed using a B-tree.

Keywords: Indexing, KNN, nearest neighbor queries

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